

International University of Africa
College of Pure and Applied Science

Research for M.Sc. Degree in General Physics
Using Simulation and Modulation Titanium Oxide as Antibacterial

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Dedication

إلى روح أمي رحمها الله

إلى روح الشهداء الطاهره

إلى كل من علمني وأضاء لي شعله في طريق المعرفة

إلى كل يد طاهرة تبني في هذا الوطن العزيز

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Abstract

In this work the effect of Titanium dioxide as an antibacterial agent is studied, this effect includes the effect of changing concentrations and wave length on the (UV) absorption. Theoretical model is proposed to explain the empirical and simulation relation. The theoretical relations for the change of absorption coefficient with wave length and concentration agrees with the empirical ones.

This theoretical relation is based on Bose-Einstein distribution. The theoretical relation covers the range of (10000 – 80000 nm) and attains maximum value at about 2000 nm. The empirical range cover the ranges of (200 – 600 nm), with peaks taking values 300, 400 and 500 nm.

ملخص

في هذا العمل تم دراسة تأثير أوكسيد التيتانيوم كعامل محفز مضاد للبكتيريا هذا التأثير يشمل تأثير تغير التركيز والطول الموجي على امتصاص الأشعة فوق البنفسجية. وتم اقتراح نموذج نظري لتفسير العلاقات التجريبية والمنمجة، وأوضحت العلاقات النظرية تغيير معامل الإمتصاص مع الطول الموجي والتركيز توافقاً مع العلاقات التجريبية المنمجة. هذه العلاقة النظرية تركز على توزيع بوز وأينشتاين حيث تغطي هذه العلاقة النظرية المدى (10000 – 80000 نانوميتر) وقيمتها العظمى عند حوالي 2000 نانوميتر. ويغطي مدى التجارب الحدود بين (200 – 600 نانوميتر) بقمم قيمها 300 و 400 و 500 نانوميتر.

Table of contents

Content	Page No.
Dedication	I
Acknowledgement	II
Abstract	III
ملخص	VI
Table of content	V
Chapter One	
(1-1) Nano science and technology	1
(1-2)Introduction	1
(1-3)Research problem	2
(1-4) Aim of work	2
(1-5)Thesis layout	2
Chapter 2	
(2-1)Introduction	3
(2-2)Nano materials	3
(2-3)Quantum dotes	3
(2-4) Occurrence	4
(2-5) Production	5
(2-6) properties of titanium dioxide	6
(2-7) Photo catalyst	8
(2-8)The photo catalytic properties of titanium dioxide	9
(2-9) Literature Review	11
Chapter 3	
Material and Methods	
(3-1) Introduction	12
(3-2)Theoretical relation for dependence of (TiO_2) absorption coefficient on medium density and wave length	12
Chapter 4	
Results and Discussions	
(3-1) Introduction	16
(4-2) Results and Discussion	16
(4-3) Conclusion	19
References	20